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State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

July 7, 2010

Audrey Graham
Grand County Council
125 East Center Street
Moab, Utah 84532

Subject: Response to Comments, Earth Energy Resources, PR Springs Mine, M/047/0090, Uintah and Grand Counties, Utah

Dear Ms. Graham:

I am responding to comments received from you and Kristine Killoy dated, respectively, April 20 and March 30, 2010. Many of the comments concern issues regulated by agencies other than the Division of Oil, Gas and Mining (DOGM), but please note that rule R647-1-102.3 contains the following provision:

> Operator Responsibilities, Compliance with other Local, State and Federal Laws:
> The approval or acceptance of a complete notice of intention shall not relieve an operator from his responsibility to comply with the applicable statutes, rules, regulations, and ordinances of all local, state and federal agencies with jurisdiction over any aspect of the operator's mining operations . . .

The concerns expressed in your letter are legitimate, but as discussed below, DOGM believes they have been adequately addressed.

1. Offsite impacts—Haul routes, traffic, and other road impacts.
   DOGM does not regulate most offsite impacts of the mine except where the impact might originate at the mine, such as water quality degradation. Haul roads within the mine area are permitted, but we have no control of traffic or potential road damage once vehicles leave the permitted area.

2. Building Permits
   The mine plan contains information about facilities that would be constructed within the permit area and about reclamation costs, but building permits are outside DOGM's jurisdiction.

3. Other safety considerations
   Police and fire protection are not within the scope of the Mined Land Reclamation Act. Pages 12 and 13 of DOGM's Notice of Intention to Commence Large Mining Operations (NOI) plan have commitments concerning blasting.

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UTAH DNR OIL, GAS & MINING

The operator will eliminate fly rock and will monitor peak particle velocities of initial blasts in order to refine the blasting protocols. Warning signs, including blasting schedules, will be posted along the fence, all access points, and at any other locations required by MSHA (NOI pp. 12-13). Warning signs will be posted in locations where public access is readily available (NOI p. 51).

4. Infrastructure needs (utilities and easements)
   The operator is permitting a water well and pipeline through a separate permitting action. These disturbances will be bonded for reclamation. The operator will be using a generator rather than installing power lines. As stated in the March 4, 2008, letter from Rob Herbert, domestic wastewater should be disposed of in a manner approved by the appropriate local health department.

5. Nuisance considerations (noise, smell, visual impacts)
   These are beyond the scope of the R647 regulations, but I would not expect these issues to have a negative effect on a large number of people. The mine is in a fairly remote area, but rather than being along a wilderness trail, it is next to a public road with its own inherent noise and other impacts.

6. Safety and sanitation of personnel accommodations
   Although it is logical that there would be personnel accommodations, they are not included in the NOI. On-site living quarters provided by an operator are normally included in the mine disturbed area and reclamation surety.

7. Storm water engineering, water availability, and general water quality concerns
   The mine site is at a topographic high point, and no major drainages run through the mine. The plant site and the mine pit have internal drainage, so there would be no discharge. Sediment and runoff from outslopes of overburden and interburden storage areas will be controlled by facing the steepest portions with coarse overburden and by installing a riprapped energy dissipater at the toe. Coir rolls, stone check dams, or other check features may be used in road ditches.

   Sand tailings will at first be interlayered with the coarse dump materials. When there is enough room in the pit, the sand tailings will be used to backfill the pit. All of these areas will have internal drainage, so there should be no runoff.

   There is little likelihood of affecting the regional aquifer because it is at least 1500 feet below the lowest level of the mine, and water movement is impeded by deposits of claystone and siltstone. Local, more shallow, springs are not part of a regional aquifer but should still not be affected for the reasons discussed in Water Quality's March 4, 2008, letter (see below).

   The Division of Water Quality has examined laboratory analyses of the waste material and material safety data sheets of the reagents to be used and does not believe residual solvents will create a hazard to ground water. Water Quality's March 4, 2008, letter to the operator (copy enclosed) discusses the reasons for this determination.

8. Waste Storage
   The waste material should not be detrimental to the environment. It is comprised of naturally occurring overburden and interburden together with processed waste sand. A small amount of residual chemical will be present on the waste sand, but all data available indicate this chemical will not be deleterious, especially in the quantities expected in the waste stream.

9. Site Reclamation
   Waste sand is expected to contain about 10-20 percent moisture which should allow good compaction without creating high pore pressures. Waste storage and other areas will be regraded to 2.5-3.0H:1.0V slopes (with a few short segments possibly steeper), and this is flat enough that, combined with the moderate moisture content, the slopes are expected to be stable.

   The existing slopes are covered with a mix of rocks and vegetation, and this will be the case after reclamation. The revegetation potential is high due to the good soils and precipitation. As subsoil, the waste sand should be nearly inert.

   Although shrubs and forbs are included in the seed mixture, the postmining vegetation community is likely to be dominated by grasses. These should provide good stability and wildlife and livestock forage, but there will probably be visual differences, at least initially.

Thank you again for your comments, and I apologize for the delay in responding. Please let me know if after reviewing this response you have specific concerns or suggestions for modifying the plan. I can be reached by telephone at 801-538-5261 or by electronic mail at paulbaker@utah.gov.

Sincerely,

Paul B. Baker
Minerals Program Manager

PBB:vs
Enclosures: DWQ March 4, 2008 letter to operator
cc: wstokes@utah.gov
Barclay.Cuthbert@earthenergyresources.com
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Incoming
M0470090

cc: Tom
Leslie
Paul

State of Utah

Department of
Environmental Quality

Richard W. Sprott
Executive Director

DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

JON M. HUNTSMAN, JR.
Governor

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Lieutenant Governor

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DIV. OF OIL, GAS & MINING

March 4, 2008

Mr. Barclay Cuthbert
Earth Energy Resources, Inc.
Suite 740, 404 – 6th Avenue SW
Calgary, Alberta, Canada T2P 0R9

Subject: PR Spring Tar Sands Project, Uintah and Grand Counties, Utah
Ground Water Discharge Permit-By-Rule

Dear Mr. Cuthbert:

The Division of Water Quality (DWQ) has reviewed the information submitted by JBR Environmental Consultants, Inc. on February 22, 2008 requesting ground water discharge permit-by-rule for the proposed Earth Energy Resources, Inc. PR Spring tar sands project. The proposed operation consists of open-pit mining of tar sands, extraction of bitumen, and disposal of tailings and waste rock.

Below are several relevant factors for determining whether the proposed operation will have a *de minimis* effect on ground water quality or beneficial uses of ground water resources.

1. Based on Material Safety Data Sheets and other information that you sent to DWQ in January 2007, the reagent to be used for bitumen extraction is generally non-toxic and volatile, and most of it will be recovered and recycled in the extraction process. (Because the extraction process is proprietary at this time, this reagent will not be identified in public documents.)

2. Bitumen extraction will be done using tanks and equipment at the processing facility located at the mine site, and no impoundments or process water ponds are planned. Most of the water used in the process will be recovered and recycled.

3. Processed tailings will not be free-draining and will have moisture content in the 10 to 20 percent range. The tailings will not contain any added constituents that are not present naturally in the rock, other than trace amounts of the reagent used for bitumen extraction. Analysis of processed tailings using the Synthetic Precipitation Leachate Procedure indicates that leachate derived from the tailings by natural precipitation would have non-detectable levels of volatile and semi-volatile organic compounds. Unprocessed tar sands and processed tailings were analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) with an extraction process that uses a much lower pH than is likely to occur at the mine site. Analytical results indicate that TCLP metals would not be leached from the tailings at detectable levels except for barium, which was detected at levels below the Utah ground water quality standard of 2.0 milligrams per liter (Table 1 of UAC 317-6). Based on these data, the tailings will be disposed by backfilling into the mine pit.

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4. The uppermost geologic formations at the site are the Parachute Creek and Douglas Creek Members of the Green River Formation, which consist of fluvial-deltaic and lacustrine-deltaic deposits of claystone, siltstone, fine-grained sandstone, and limestone. The Parachute Creek Member outcrops over most of the Earth Energy lease and is the 0 to 50-foot thick overburden above the tar sand deposits of the Douglas Creek Member. Shallow ground water at the site is not part of a regional aquifer but occurs in localized laterally discontinuous perched sandstone lenses of the Douglas Creek Member. Exploration drilling did not encounter ground water within 150 feet of the land surface. Based on records from the Division of Oil, Gas, and Mining, the closest major aquifer is the Mesa Verde Formation, which occurs approximately 2000 feet below ground surface in the area of the proposed mine. The topography of the project area is characterized by mesas incised by deep, narrow canyons, and limited shallow ground water discharges as springs in the canyon bottoms. There are no springs in the Earth Energy leased area and the nearest spring is PR Spring located slightly less than a mile east of the project site.

Considering the factors described above, the proposed mining and bitumen extraction operation should have a *de minimis* potential effect on ground water quality and qualifies for permit-by-rule status under UAC R317-6-6.2.A(25). If any of these factors change because of changes in your operation or from additional knowledge of site conditions, this permit-by-rule determination may not apply and you should inform the DWQ of the changes. If future project knowledge or experience indicates that ground water quality is threatened by this operation, the Executive Secretary may require that you apply for a ground water discharge permit in accordance with UAC R317-6-6.2.C.

This operation may require a storm water permit under the Utah Pollutant Discharge Elimination System (UPDES). Please contact Mike George of this office at (801) 538-9325 to determine if a storm water permit is required.

Disposal of domestic wastewater from the operation should be done in a manner approved by the appropriate local health department; Tri-County Health Department for Uintah County or Southeastern Utah Health Department for Grand County.

If you have any questions about this letter, please contact Mark Novak at (801) 538-6518.

Sincerely,

Robert J. Herbert

Rob Herbert, P.G., Manager
Ground Water Protection Section

cc: Robert Bayer, JBR
Paul Baker, DOGM
Carl Adams, DWQ-TMDL
Mike George, DWQ-UPDES Storm Water
Dave Ariotti, Southeastern Utah District Engineer
Scott Hacking, Tri-County District Engineer
Southeastern Utah Health Department
Tri-County Health Department

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